Patient Care Policies

POLICY TITLE: **Therapeutic Hypothermia: Patient Management**

APPLICABLE FACILITIES: **MCH**

POLICY NUMBER:

DATE EFFECTIVE:

DATE REVIEWED and/or REVISED:

PURPOSE

To provide guidelines for the management of patients who receiving therapeutic hypothermia following out-of-hospital cardiac arrest.

DEFINITION

Therapeutic Hypothermia is the active cooling of the body temperature to 33 degrees Centigrade.

Patient criteria for therapeutic hypothermia include:

a. Patients who have experienced an out-of-hospital cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia and have a return of spontaneous circulation but remain comatose, even if there is a response to painful stimuli.
b. Patients who need circulatory support can be included if mean arterial pressure (MAP) is sustained at 65 mm Hg or higher, including those on Intra-aortic Balloon Pump (IABP) support.

Patient criteria excluded from therapeutic hypothermia include:

a. Patients requiring more than 60 minutes of cardiopulmonary resuscitation prior to arrival in the Emergency Department
b. Patients with refractory hypoxia post resuscitation (SaO2 < 85%)
c. Patients who regain consciousness in the Emergency Department.
d. Patients in the hospital who experience a cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia.

POLICIES

1. Eligibility of patient for therapeutic hypothermia is identified by the Emergency Medicine physician and/or Intensivist.
2. A provider order is required to initiate therapeutic hypothermia procedure.
3. Registered Nurses (RNs) who have been educated in hypothermia management care for patients receiving therapeutic hypothermia.

4. Patients receiving therapeutic hypothermia are in the Emergency Department or Critical Care.
5. Patients receiving therapeutic hypothermia are mechanically ventilated.
6. Prior to initiation of therapeutic hypothermia, the patient is given medication for analgesia, sedation and muscle relaxation as ordered by the provider. The level of sedation is assessed every hour using the Ramsey scale.
7. Continuous hemodynamic monitoring, including the patient's oxygenation, blood pressure, ventilation, heart rate and rhythm are maintained and documented.
8. Antiarrhythmic and/or cardiovascular medications are administered to the patient as needed per provider order.
9. Patient requiring interventional cardiac procedure will continue with therapeutic hypothermia during procedure.
10. Hypothermia continues for 24 hours from the time the cooling is initiated and not when the patient's temperature reaches 33º C.

EQUIPMENT

1. Hypothermia regulation system
2. Foley catheter with thermistor (for temperature monitoring)
3. Peripheral Nerve Stimulator
4. EEG monitor

PROCEDURES

Preparation

1. Upon arrival to ED, verify eligibility of patient for therapeutic hypothermia.
2. Obtain provider order to initiate therapeutic hypothermia.
3. Notify Intensivist (2-5043) and 2 West Team Leader (2-2016)
4. ED RN: locate the hypothermia regulation system.
5. Notify Interventional Cardiologist on-call for consultation regarding possible cardiac catheterization.
6. Obtain neurological consult at initiation of therapeutic hypothermia to facilitate continuous EEG monitoring.

Initiation of Procedure

1. Insert foley catheter with thermistor for temperature monitoring.
2. Insert arterial line.
3. Apply cooling pads to patient per manufacturer's guidelines.
4. Attach cooling pads to the hypothermia regulation system.
5. Set hypothermia regulation system to patient target temperature of 33 degrees Centigrade (refer to manufacturer's guidelines to set temperature.)
6. Apply peripheral nerve stimulator to the ulnar nerve prior to the administration of a muscle relaxant. (Refer to *Neuromuscular Blockade: Patient Management* policy)
7. Initiate sedation/relaxation medication as ordered.

Maintenance Care during Procedure

1. Continuous monitoring:
   a. Maintain continuous monitoring of temperature and document every hour.
   b. Monitor sedation level every hour.

c. Maintain continuous monitoring, including the patient's oxygenation, blood pressure, ventilation and heart rate and rhythm.
d. Monitor Train- of - Four (TOF) every one hour with a goal of 1-2/4 while receiving neuromuscular blockade. Maintain paralysis to a 1-2/4 TOF to suppress shivering.

2. Maintain hypothermia for 24 hours from the time cooling is initiated.
3. Provide medication for analgesia, sedation and muscle relaxation as needed.

Discontinuation of Procedure

1. After cooling the patient for 24 hours, re-warm the patient passively to 36.5 degrees Centigrade by setting hypothermia regulation system to temperature of 36.5 degrees Centigrade. (Refer to manufacturer's guidelines to set temperature.)
2. Re-warm patient at rate of 0.3 degrees per hour. (At 0.3 degrees/hour re-warming will take 12 hours)

DOCUMENTATION

All documentation is noted in the patient's medical record.
Initial documentation includes

- Time of application and initiation of therapy
- Size of pads
- Patient's current core temperature
- Mode of operation
- Integrity of patient's skin
- Baseline vital signs, oxygenation level, sedation level, train of four
- Heart rate and rhythm

Every one hour documentation includes

- Temperature, sedation level, vital signs, oxygenation level
- Heart rate and rhythm
- Water temperature
- Train of four, Presence/absence of shivering

Every 4 hours and prn documentation includes

- Integrity of patient's skin (peel back pads to assess skin)
- Patient's temperature from another source
- Time target temperature reached
- Disconnection or interruption of therapy
- Time therapy is resumed
- Time therapy is discontinued
- Patient's tolerance of procedure
- Adverse reaction of the patient to the procedure

REFERENCES

1. Nolan JP, Morley PT, Vanden Hoek TL, Hickey RW and ALS Task Force. Therapeutic hypothermia after cardiac arrest. An advisory statement by the Advanced Life Support Task Force of the International Liaison Committee on Resuscitation. *Resuscitation* 2003; 57: 231-235.

2. Froehler, MT, Geocadin, RG. Hypothermia for neuroprotection after cardiac arrest: Mechanisms, clinical trials and patient care. J. Neurol Sci (2007), doi:10.1016/j.jns.2007.04.042
3. Sunde K, Pytte M, Jacobsen D, Mangschau A, Jensen LP, Smedrsud C, Draegni T, Steen PA. Implementation of a standardized treatment protocol for post resuscitation care after out-of-hospital cardiac arrest. 2006 Elsevier Ireland Ltd. Doi:10.1016/j.resuscitation.2006.08.016

RELATED POLICIES
Neuromuscular Blockade: Patient Management

Key words:
Hypothermia